

■ NPN Transistors



■ Features

- Epitaxial planar die construction.
- Complementary PNP type available(MMBT2907A)

■ Marking

Marking	1P
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■ Simplified outline(SOT-23)

■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V _{CB0}	70	V
Collector - Emitter Voltage	V _{CEO}	40	
Emitter - Base Voltage	V _{EBO}	6	
Collector Current - Continuous	I _c	600	mA
Power Dissipation	P _D	250	mW
Thermal resistance from junction to ambient	R _{θJA}	417	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{stg}	-55 to 150	

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _c = 100 μA, I _E = 0	75			V
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _c = 10 mA, I _B = 0	40			V
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	I _E = 100 μA, I _C = 0	6			V
Collector cutoff current	I _{CBO}	V _{CB} =60V, I _E =0			100	nA
Collector cut-off current	I _{CEx}	V _{CE} =30V, V _{EB(off)} =-3V			10	nA
Emitter cutoff current	I _{EBO}	V _{EB} = 3V, I _C =0			100	nA
DC current gain	h _{FE}	V _{CE} =10V, I _c = 0.1mA	40			
		V _{CE} =10V, I _c = 150mA	100		300	
		V _{CE} =10V, I _c = 500mA	42			
collector-emitter saturation voltage *	V _{CE(sat)}	I _c = 150 mA; I _B = 15 mA			0.3	V
		I _c = 500 mA; I _B = 50 mA			1	V
base-emitter saturation voltage *	V _{BE(sat)}	I _c = 150 mA; I _B = 15 mA	0.6		1.2	V
		I _c = 500 mA; I _B = 50 mA			2	V
Transition frequency	f _T	I _c = 20 mA; V _{CE} = 20 V; f = 100 MHz	300			MHz
Delay time	t _d	V _{CC} =30V, V _{BE(off)} =-0.5V, I _c =150mA, I _{B1} = 15mA			10	ns
Rise time	t _r				25	ns
Storage time	t _s				225	ns
Fall time	t _f	V _{CC} =30V, I _c =150mA, I _{B1} =-I _{B2} =15mA			60	ns

* pulse test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.

■ Typical Characteristics

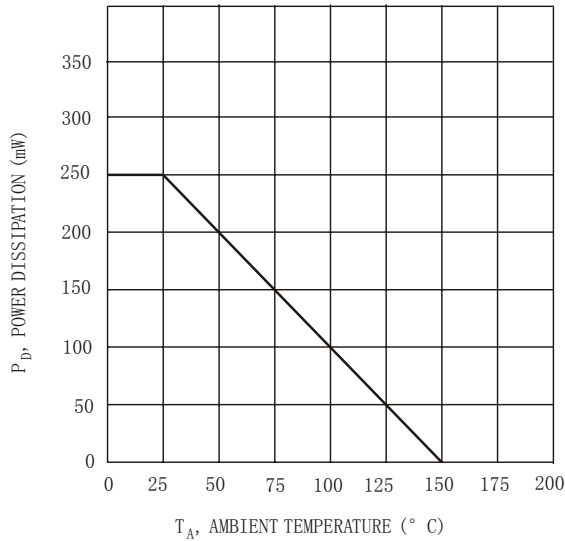


Fig. 1, Max Power Dissipation vs Ambient Temperature

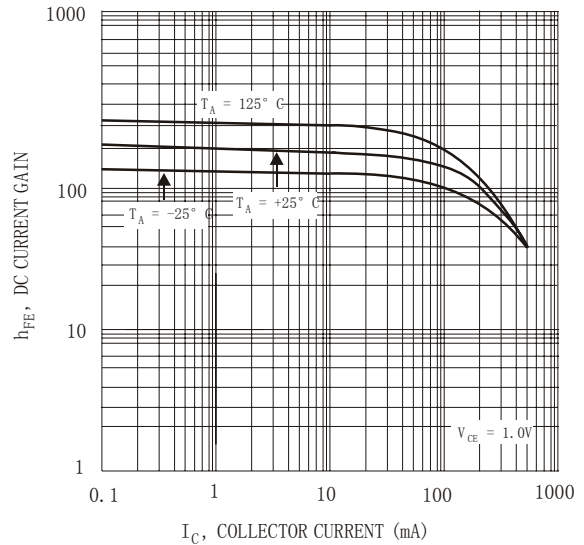


Fig. 2, Typical DC Current Gain vs Collector Current

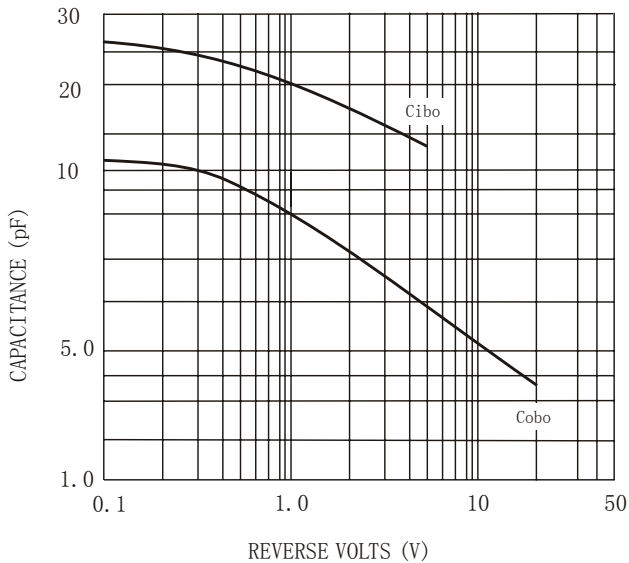


Fig. 3 Typical Capacitance

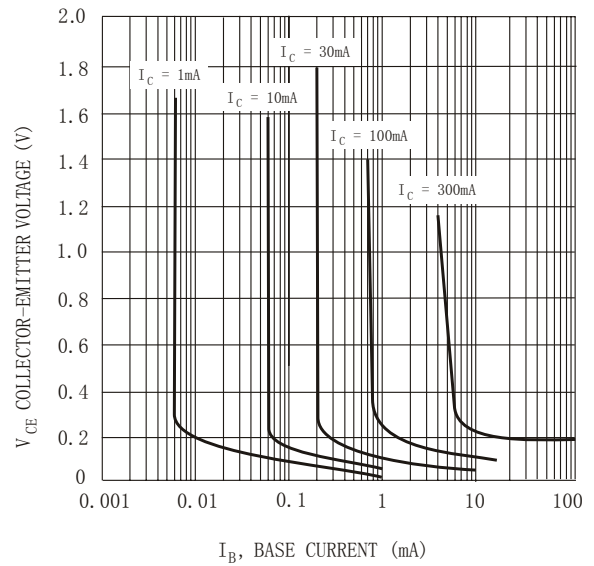
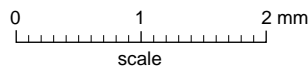
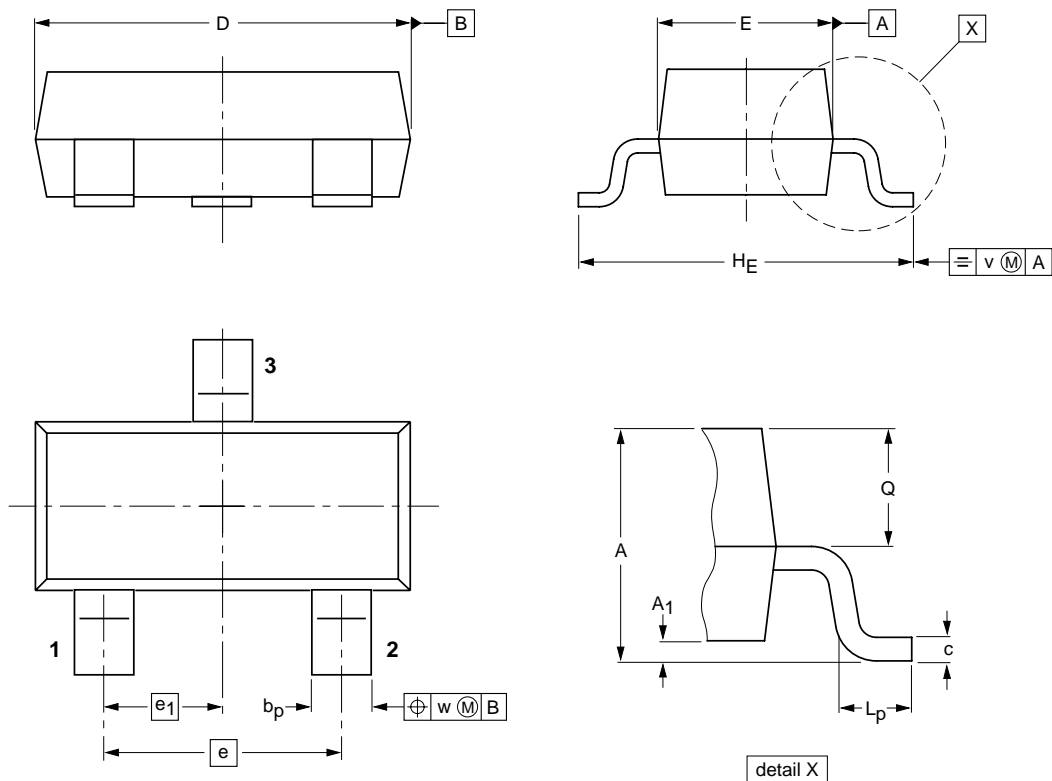


Fig. 4 Typical Collector Saturation Voltage

Package Outline

SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel, 7" reel	3000	EIA-481-1